11-23-05

PATENT
Attorney Docket No.: 2002-IP-009328 U1 USA

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**
**BOARD OF PATENT APPEALS AND INTERFERENCES**

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| In re Patent Application of: | Tommy Grigsby, et al. |
| Serial No.: | 10/680,625 |
| Filed: | October 7, 2003 |
| Entitled: | DOWNHOLE FIBER OPTIC WET CONNECT AND GRAVEL PACK COMPLETION |
| Group Art Unit: | 2839 |
| Examiner: | T. Le |

# APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Appellants hereby timely submit this Appeal Brief under the provisions of 37 CFR §41.37 and respectfully request consideration thereof before the Board of Patent Appeals and Interferences. Appellants' Notice of Appeal was filed on September 23, 2005, appealing to the Board from the decision of the examiner, mailed June 27, 2005, twice rejecting the claims of the above-identified patent application.

A credit card payment form in the amount of $500.00 is enclosed herewith in payment of the fee specified in 37 CFR §41.20(b)(2).

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## REAL PARTY IN INTEREST

The real party in interest is the assignee of the present application, Halliburton Energy Services, Inc. of Houston, Texas.

## RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences known to appellants, the appellants' legal representatives or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

## STATUS OF CLAIMS

Claims 1-88 were originally filed in the present application. Claims 6, 7, 12, 13, 19, 37-45, 58-69 and 80 are presently withdrawn from consideration as being drawn to a non-elected species.

Claims 1-88 are currently pending in the application.

Claims 1-5, 8, 10, 11, 14-17, 20-36, 46-57, 70-79 and 81-88 are rejected.

Claims 1-5, 8, 10, 11, 14-17, 20-36, 46-57, 70-79 and 81-88 are being appealed.

## STATUS OF AMENDMENTS

An Amendment was filed on April 22, 2005 in response to an Office Action dated January 26, 2005. The Amendment was entered and considered by the examiner as evidenced in the Office Action Summary of the Office Action dated June 27, 2005. The claims as listed in the accompanying Claims Appendix reflect the changes to the claims made by the Amendment.

## SUMMARY OF CLAIMED SUBJECT MATTER

The present invention advances the art of communicating and sensing properties of substances in a subterranean wellbore through the use of fiber optics. In one embodiment of the invention representatively illustrated in FIGS. 1-6B, a gravel pack completion is accomplished in a manner which conveniently provides for fiber optic monitoring of the gravel pack completion.

In FIG. 1, a gravel pack assembly 12 is depicted installed in a wellbore. According to conventional practice, the gravel pack assembly is conveyed into the wellbore on a specialized tubular work string (not shown), which is later retrieved from the well. A production tubing string 26 (see FIG. 2) is then engaged with the gravel pack assembly 12 for producing hydrocarbons to the surface.

One problem presented by this gravel pack completion is how to provide fiber optic monitoring of the gravel pack completion after the work string has been retrieved from the well and the production tubing string 26 has been installed. The present inventors have solved this problem by including an upper section of fiber optic line 34 with the production tubing string 26 as it is installed, with an optical connector 36 inside the tubing string (see FIG. 2).

After the tubing string 26 is installed, a separate tubular member 52 is conveyed into the tubing string (see FIG. 3). This tubular member 52 carries with it a lower section of fiber optic line 50 and another optical connector 54. When the two optical connectors 36, 54 are connected in the well, a continuous optical path is provided from within the gravel pack completion to the surface.

An alternate configuration is depicted in FIG. 4, with the lower section of fiber optic line being positioned in the interior and exterior of the tubular member 48, and with various sensors 58, 60, 62 connected to the fiber optic lines 50, 56. A detailed construction of one embodiment of a housing 32 and tubular member 48 configuration with associated optical connectors 36, 54 and means for connecting the connectors in the well is depicted in FIGS. 5A-6B.

Note that, by installing the tubular member 48 and its associated optical connector 54 and fiber optic line 50 as described in the specification, this assembly is easily retrievable for maintenance, repair or replacement. For example, if one of the

sensors 58, 60, 62 or the optical connector 54 should malfunction, the tubular member 48 can be retrieved from the well and conveniently repaired or replaced. Furthermore, the tubular member 48 can be initially installed after the gravel packing operation is completed and after the gravel packing work string has been retrieved from the well. In this manner, the delicate fiber optic line 50 and sensors 58, 60, 62 do not have to be present in the gravel pack assembly 12 during the gravel packing operation (which involves high pressure and high flow rate abrasive slurry placement through the gravel pack assembly).

In one important aspect of the invention recited in independent claim 1, a fiber optic connector is operatively connected to another fiber optic connector after one of the connectors is positioned in a well. A connection is made between the two fiber optic connectors after the connectors are positioned in the well. In the example of FIGS. 1-6B, this aspect of the invention provides for the installation of the tubular member 48 with its associated fiber optic line 50 and optical connector 54 after the production tubing assembly 26 has been installed in the well.

In another important aspect of the invention recited in independent claims 11 and 32, an orienting device orients one assembly relative to another assembly positioned in the well to thereby align two fiber optic connectors, so that a connection can be made between the connectors after the connectors are positioned in the well. In FIG. 5A an orienting device 64 is used to engage a lug 82 on the tubular member 48 (see FIG. 6A) to thereby align the fiber optic connectors 36, 54.

In yet another important aspect of the invention recited in independent claim 46, the housing has a connector positioned in its sidewall, and another connector is received in an internal passage of the housing. A connection is made between the connectors after the connectors are positioned in the well. In FIG. 5B note the connector 36 in a sidewall of the housing 32, and in FIG. 6B note how a connection is made between the connectors 36, 54 after installation in the well.

In a further important aspect of the invention recited in independent claim 70, an assembly is received in an interior passage of a tubular string. The assembly includes a fiber optic connector, and a connection is made between this connector and another

fiber optic connector in the tubular string after the connectors are positioned in the well. This is depicted in FIGS. 3&4, wherein the tubular member 52 with its associated fiber optic line 50 and connector 54 are received in a passage 44 in the tubing string 26.

In a still further important aspect of the invention recited in independent claim 83, two fiber optic lines are positioned in the well. One of the lines extends in a formation intersected by the well and has a sensor operatively coupled to it, and the other line extends to a remote location. The fiber optic lines are connected to each other while the lines are in the well. In FIGS. 3&4, note that the lower section of fiber optic line 50 extends through a subterranean formation 16, and the upper section of fiber optic line extends to a remote location (such as the earth's surface).

## GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-5, 8, 10, 11, 14-17, 20-36, 46-57, 70-79 and 81-88 are rejected under 35 USC §103(a) as being obvious over U.S. Patent No. 6,766,853 to Restarick, et al.

## ARGUMENT

*The Obviousness Rejections*

As a preface to the arguments below regarding the individual obviousness rejections, please note that the Restarick reference describes a system and method which is specifically designed for making optical connections in a tubing string before the tubing string is installed in a well. As stated in the Restarick reference, this is to enable tool assemblies, when interconnected in the tubing string at the surface, to be properly spaced apart in the tubing string, so that upon installation the tool assemblies will be properly positioned in the well (see col. 3, lines 45-59).

The examiner acknowledges in section 2 of the Office Action that Restarick does not describe the invention as claimed:

> Restarick et al. disclose the instant claimed invention as described above except for a connection between the first and second fiber optic

> connectors being made after the first and second fiber optic connectors are positioned in the well.

However, the examiner then states the following:

> In absence of any showing criticality of the applicant, to provide Restarick et al. to have the connection between the first and second fiber optic connectors being made after the first and second fiber optic connectors are positioned in the well would have been obvious of modification since such change provides unexpected result.

The appellants are unsure what is meant by this statement. Neither the patent laws nor the patent rules require any showing of criticality to obviate a finding of obviousness. Instead, as stated in the MPEP §2142:

> The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

In the present case, the examiner has taken a reference which clearly teaches directly away from the claimed invention and, without any factual supporting evidence, merely alleges that a person skilled in the art would find it obvious from the reference's teachings to do what the reference does not teach or even suggest. The appellants respectfully submit that a *prima facie* case of obviousness has not been made out with regard to any of the rejected claims.

*Rejections under 35 USC §103(a) over Restarick*

Claim 1

As discussed above, Restarick does not describe any optical connection being made after fiber optic connectors are positioned in a well. The examiner acknowledges this fact in the Office Action. Instead, Restarick teaches that optical connections should be made prior to installing well tool assemblies in a continuous tubing string. A person skilled in the art would clearly not be motivated to produce the invention recited in

claim 1 from the teachings of Restarick. A *prima facie* case of obviousness of claim 1 has not been made out, and the Board is respectfully requested to direct the examiner to withdraw the rejections of claim 1 and its dependents.

Specific arguments regarding the claims dependent from claim 1 are not presented here, since claim 1 is clearly allowable over the Restarick reference, but the appellants wish to reserve the opportunity to present such arguments in the future if necessary.

Claims 11 and 32

Claim 11 recites in apparatus form, and claim 32 recites in method form, the aspect of the invention wherein an orienting device orients one assembly relative to another assembly positioned in the well to thereby align two fiber optic connectors, so that a connection can be made between the connectors after the connectors are positioned in the well. As discussed above, Restarick teaches that optical connections should be made prior to installing assemblies in a well, and does not teach that optical connections should be made after assemblies are positioned in the well. For at least this reason, a *prima facie* case of obviousness has not been made out for either of claims 11 or 32.

In addition, Restarick does not teach how assemblies could be oriented in the well to thereby align fiber optic connectors. Instead, Restarick describes only that optical connections can be made at the surface and prior to installing their associated assemblies in the well. Thus, for this additional reason a *prima facie* case of obviousness has not been made out for either of claims 11 or 32, and the Board is respectfully requested to direct the examiner to withdraw the rejections of claims 11 and 32, and of their dependents.

Specific arguments regarding the claims dependent from claims 11 and 32 are not presented here, since claims 11 and 32 are clearly allowable over the Restarick reference, but the appellants wish to reserve the opportunity to present such arguments in the future if necessary.

Claim 46

This independent claim recites that a housing has a connector positioned in its sidewall, and another connector is received in an internal passage of the housing. A connection is made between the connectors after the connectors are positioned in the well. As discussed above, Restarick does not teach or suggest in any way how a connection could be made between connectors after the connectors are positioned in a well. For at least this reason, a *prima facie* case of obviousness has not been made out for claim 46.

Furthermore, although Restarick does describe a fiber optic connector in a sidewall of a housing, Restarick does not teach or suggest how a second connector positioned in an internal passage of the housing could be connected with the connector in the sidewall after the connectors are positioned in the well. For this additional reason, a *prima facie* case of obviousness has not been made out for claim 46, and the Board is respectfully requested to direct the examiner to withdraw the rejections of claim 46 and its dependents.

Specific arguments regarding the claims dependent from claim 46 are not presented here, since claim 46 is clearly allowable over the Restarick reference, but the appellants wish to reserve the opportunity to present such arguments in the future if necessary.

Claim 70

This independent claim recites an aspect of the invention wherein an assembly is received in an interior passage of a tubular string. The assembly includes a fiber optic connector, and a connection is made between this connector and another fiber optic connector in the tubular string after the connectors are positioned in the well. As discussed above, Restarick does not teach or suggest in any way how a connection could be made between fiber optic connectors after the connectors are positioned in a well. For at least this reason, a *prima facie* case of obviousness has not been made out for claim 70.

Furthermore, although Restarick does describe fiber optic connections being made in a continuous tubing string, Restarick does not describe or suggest an assembly being received in an interior passage of the tubing string, with connections being made

between fiber optic connectors in the assembly and tubing string, or with such connections being made after the connectors are positioned in a well. Instead, Restarick teaches that fiber optic connections should be made before installing fiber optic connectors in a well. For this additional reason, a *prima facie* case of obviousness has not been made out for claim 70, and the Board is respectfully requested to direct the examiner to withdraw the rejections of claim 70 and its dependents.

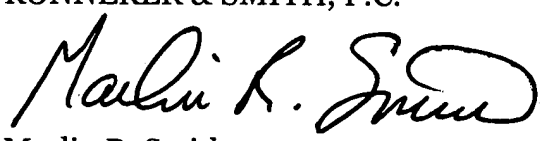
Specific arguments regarding the claims dependent from claim 70 are not presented here, since claim 70 is clearly allowable over the Restarick reference, but the appellants wish to reserve the opportunity to present such arguments in the future if necessary.

Claim 83

This independent claim recites an aspect of the invention wherein two fiber optic lines are positioned in a well. One of the lines extends in a formation intersected by the well and has a sensor operatively coupled to it, and the other line extends to a remote location. The fiber optic lines are connected to each other while the lines are in the well. As discussed above, Restarick does not teach or suggest in any way how a connection could be made between fiber optic connectors after the connectors are positioned in a well. Restarick also does not teach or suggest how two fiber optic lines could be connected to each other while the lines are in the well. For at least this reason, a *prima facie* case of obviousness has not been made out for claim 83.

Specific arguments regarding the claims dependent from claim 83 are not presented here, since claim 83 is clearly allowable over the Restarick reference, but the appellants wish to reserve the opportunity to present such arguments in the future if necessary.

Respectfully submitted,
KONNEKER & SMITH, P.C.



Marlin R. Smith

Attorney for Appellants
Registration No. 38,310

Dated: November 22, 2005

660 North Central Expressway, Suite 230
Plano, Texas 75074
(972) 516-0030

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Thresa Duffee

## CLAIMS APPENDIX

1. A system for making fiber optic connections in a subterranean well, the system comprising:

a first fiber optic connector positioned in the well; and

a second fiber optic connector operatively connected to the first fiber optic connector after the first fiber optic connector is positioned in the well, a connection between the first and second fiber optic connectors being made after the first and second fiber optic connectors are positioned in the well.

2. The system according to claim 1, wherein the first fiber optic connector is operatively coupled to a fiber optic line which is configured to sense a downhole parameter.

3. The system according to claim 1, wherein the first fiber optic connector is operatively coupled to a fiber optic line which has a sensor connected thereto.

4. The system according to claim 1, wherein the first fiber optic connector is attached to a first downhole assembly, wherein the second fiber optic connector is attached to a second downhole assembly, and wherein the first and second assemblies are attached to each other downhole, thereby operatively connecting the first and second fiber optic connectors.

5. The system according to claim 4, wherein the first and second assemblies are rotationally oriented with respect to each other prior to operatively connecting the first and second fiber optic connectors.

6. The system according to claim 4, wherein each of the first and second assemblies is a gravel packing assembly.

7. The system according to claim 4, wherein the first assembly is a gravel packing assembly, and wherein the second assembly is a production tubing string.

8. The system according to claim 1, wherein at least one of the first and second fiber optic connectors is operatively coupled to a fiber optic line extending longitudinally through a packer.

9. The system according to claim 1, wherein the first fiber optic connector is operatively coupled to a first fiber optic line positioned external to a tubular string in the well, and wherein the second fiber optic connector is operatively coupled to a second fiber optic line positioned internal to the tubular string.

10. The system according to claim 1, wherein the first fiber optic connector is attached to a tubular string, and wherein the second fiber optic connector is attached to an assembly received within the tubular string.

11. A system for making fiber optic connections in a subterranean well, the system comprising:

a first assembly positioned in the well, the first assembly including a first fiber optic connector;

a second assembly positioned in the well, the second assembly including a second fiber optic connector; and

an orienting device orienting the first assembly relative to the second assembly, thereby aligning the first and second fiber optic connectors, a connection between the

first and second fiber optic connectors being made after the first and second fiber optic connectors are positioned in the well.

12. The system according to claim 11, wherein each of the first and second assemblies is a gravel packing assembly.

13. The system according to claim 11, wherein the first assembly is a gravel packing assembly, and wherein the second assembly is a production tubing string.

14. The system according to claim 11, wherein the first assembly is a tubular string, and wherein the second assembly is received within the tubular string.

15. The system according to claim 14, wherein the second assembly is conveyed on a running tool through the tubular string.

16. The system according to claim 15, wherein pressure applied between the running tool and the tubular string causes the first and second fiber optic connectors to operatively connect with each other.

17. The system according to claim 11, wherein at least one of the first and second fiber optic connectors is operatively coupled to a fiber optic line extending through a packer in the well.

18. The system according to claim 11, wherein the first fiber optic connector is operatively coupled to a first fiber optic line positioned external to a tubular string, and wherein the second fiber optic connector is operatively connected to a second fiber optic line positioned internal to the tubular string.

19. The system according to claim 11, wherein the first and second fiber optic connectors are operatively coupled to respective ones of first and second fiber optic lines positioned external to a tubular string.

20. The system according to claim 11, wherein at least one of the first and second fiber optic connectors is operatively coupled to a fiber optic line configured to sense a parameter in the well.

21. The system according to claim 11, wherein at least one of the first and second fiber optic connectors is operatively coupled to a fiber optic line attached to a sensor for sensing a parameter in the well.

22. The system according to claim 11, wherein the first assembly is a receptacle interconnected in a tubular string in the well, and wherein the second assembly is releasably secured in the receptacle.

23. The system according to claim 22, wherein the first and second connectors are operatively connected in response to pressure applied to the receptacle.

24. The system according to claim 22, wherein the second assembly extends into a third assembly positioned in the well.

25. The system according to claim 24, wherein the third assembly is a gravel packing assembly.

26. The system according to claim 24, wherein the third assembly is positioned in the well prior to conveying the first assembly into the well.

27. The system according to claim 24, wherein the second assembly includes a fiber optic line operatively coupled to the second fiber optic connector, the fiber optic line extending into the third assembly.

28. The system according to claim 27, wherein the fiber optic line transmits an indication of a parameter sensed in the third assembly.

29. The system according to claim 27, wherein the fiber optic line is positioned external to the second assembly in the third assembly.

30. The system according to claim 27, wherein the fiber optic line is positioned internal to the second assembly in the third assembly.

31. The system according to claim 11, wherein pressure applied to the first assembly causes operative connection of the first and second fiber optic connectors.

32. A method of making fiber optic connections in a subterranean well, the method comprising the steps of:

positioning a first assembly in the well, the first assembly including a first fiber optic connector;

positioning a second assembly in the well, the second assembly including a second fiber optic connector;

orienting the first and second assemblies in the well, thereby aligning the first and second fiber optic connectors; and

then operatively connecting the first and second fiber optic connectors in the well.

33. The method according to claim 32, wherein the orienting step further comprises rotationally orienting the first and second assemblies.

34. The method according to claim 32, further comprising the step of attaching the second assembly to the first assembly.

35. The method according to claim 34, wherein the attaching step further comprises securing the second assembly within the first assembly.

36. The method according to claim 32, further comprising the step of sealing between the first and second assemblies.

37. The method according to claim 32, wherein each of the first and second assemblies is a gravel packing assembly, and wherein the orienting step further comprises rotationally orienting the second gravel packing assembly relative to the first gravel packing assembly.

38. The method according to claim 37, further comprising the step of operatively coupling the first fiber optic connector to a first fiber optic line extending longitudinally relative to the first gravel packing assembly.

39. The method according to claim 38, further comprising the step of extending the first fiber optic line through a packer of the first gravel packing assembly.

40. The method according to claim 38, further comprising the step of operatively coupling the second fiber optic connector to a second fiber optic line extending longitudinally relative to the second gravel packing assembly.

41. The method according to claim 40, further comprising the step of extending the second fiber optic line through a packer of the second gravel packing assembly.

42. The method according to claim 32, wherein the first assembly is a gravel packing assembly, wherein the second assembly is a tubing string, and wherein the orienting step further comprises rotationally orienting the tubing string relative to the gravel packing assembly.

43. The method according to claim 42, further comprising the step of operatively coupling the first fiber optic connector to a fiber optic line extending longitudinally relative to the tubing string.

44. The method according to claim 42, further comprising the step of operatively coupling the second fiber optic connector to a fiber optic line extending longitudinally relative to the gravel packing assembly.

45. The method according to claim 44, further comprising the step of extending the fiber optic line through a packer of the gravel packing assembly.

46. An apparatus for making a connection between lines in a subterranean well, the apparatus comprising:

an outer housing having a sidewall, and a passage extending through the housing;

a first connector positioned in the housing sidewall; and

a second connector received within the passage, the first and second connectors being operatively connectable after the apparatus is positioned in the well, a connection between the first and second connectors being made after the first and second connectors are positioned in the well.

47. The apparatus according to claim 46, wherein the first connector is attached to a piston reciprocably received in the housing sidewall.

48. The apparatus according to claim 47, wherein pressure applied to the piston displaces the first connector into operative engagement with the second connector.

49. The apparatus according to claim 47, wherein the second connector is attached to an assembly received within the passage, pressure applied through the assembly causing the first and second connectors to operatively engage.

50. The apparatus according to claim 49, wherein the assembly includes a fiber optic line operatively coupled to the second connector, the fiber optic line extending longitudinally within the passage.

51. The apparatus according to claim 50, wherein the fiber optic line extends into a gravel packing assembly attached to the housing.

52. The apparatus according to claim 49, further comprising an orienting profile which rotationally orients the assembly relative to the housing, thereby aligning the first and second connectors.

53. The apparatus according to claim 49, further comprising an anchoring device which releasably secures the assembly relative to the housing.

54. The apparatus according to claim 46, wherein each of the first and second connectors is a fiber optic connector.

55. The apparatus according to claim 46, wherein at least one fiber optic line is coupled to each of the first and second connectors.

56. The apparatus according to claim 46, wherein multiple types of lines are coupled to each of the first and second connectors.

57. The apparatus according to claim 46, wherein a selected one or more of fiber optic, electrical and hydraulic lines are coupled to each of the first and second connectors.

58. A system for making connections between lines in a subterranean well, the system comprising:

a packer assembly including a first orienting device and a first fiber optic connector; and

a tubular string including a second orienting device and a second fiber optic connector, and

wherein the first and second orienting devices align the first and second fiber optic connectors for operative connection therebetween when the tubular string is engaged with the packer in the well.

59. The system according to claim 58, wherein a fiber optic line operatively coupled to the first connector extends longitudinally through the packer.

60. The system according to claim 58, further comprising a well screen attached to the packer.

61. The system according to claim 60, wherein a fiber optic line operatively coupled to the first connector extends longitudinally through the well screen.

62. The system according to claim 60, wherein a fiber optic line operatively coupled to the first connector extends externally across the well screen.

63. The system according to claim 58, wherein the second connector is positioned external to the tubular string.

64. The system according to claim 58, wherein the tubular string includes a third connector.

65. The system according to claim 64, wherein the third connector is positioned internal to the tubular string.

66. The apparatus according to claim 58, wherein at least one fiber optic line is coupled to each of the first and second connectors.

67. The apparatus according to claim 58, wherein multiple types of lines are coupled to each of the first and second connectors.

68. The apparatus according to claim 58, wherein a selected one or more of fiber optic, electrical and hydraulic lines are coupled to each of the first and second connectors.

69. The apparatus according to claim 58, wherein the tubular string is secured to the packer when the tubular string is engaged with the packer in the well.

70. A system for making fiber optic connections in a subterranean well, the system comprising:

a tubular string including a passage formed through the tubular string, and a first fiber optic connector; and

an assembly received in the passage, the assembly including a second fiber optic connector, a connection between the first and second fiber optic connectors being made after the first and second fiber optic connectors are positioned in the well.

71. The system according to claim 70, wherein the first and second connectors are operatively connected to each other after the tubular string is positioned in the well.

72. The system according to claim 70, wherein the tubular string includes a first orienting device, wherein the assembly includes a second orienting device, and wherein engagement between the first and second orienting devices aligns the first and second fiber optic connectors.

73. The system according to claim 70, wherein pressure applied to at least one of the tubular string and the assembly causes relative displacement between the first and

second fiber optic connectors, thereby causing the first and second fiber optic connectors to operatively connect.

74. The system according to claim 70, wherein pressure applied to at least one of the tubular string and the assembly causes relative displacement between the first and second fiber optic connectors, thereby causing the first and second fiber optic connectors to operatively disconnect.

75. The system according to claim 70, wherein the second fiber optic connector is operatively coupled to a sensor of the assembly.

76. The system according to claim 75, wherein the sensor extends into a gravel packing assembly.

77. The system according to claim 75, wherein the sensor monitors temperature distributed along the assembly.

78. The system according to claim 75, wherein the sensor identifies a location of influx of water from a formation intersected by the well.

79. The system according to claim 70, wherein the first fiber optic connector is operatively coupled to a fiber optic line extending external to the tubular string.

80. The system according to claim 70, wherein the assembly is positioned in the passage when the tubular string is installed in the well, and wherein the assembly is displaced in the passage, thereby operatively connecting the first and second fiber optic connectors, after the tubular string is installed in the well.

81. The system according to claim 70, wherein the assembly is positioned and displaced in the passage, thereby operatively connecting the first and second fiber optic connectors, after the tubular string is installed in the well.

82. The system according to claim 70, wherein the assembly is secured to the tubular string when the assembly is received in the passage.

83. A method of monitoring a subterranean well, the method comprising the steps of:

positioning a first fiber optic line in the well, the first fiber optic line extending in a formation intersected by the well;

positioning a second fiber optic line in the well, the second fiber optic line extending to a remote location;

operatively connecting the first and second fiber optic lines while the first and second fiber optic lines are in the well; and

monitoring a well parameter using a sensor operatively coupled to the first fiber optic line.

84. The method according to claim 83, wherein in the monitoring step the sensor is a portion of the first fiber optic line.

85. The method according to claim 83, wherein the monitoring step further comprises using the sensor to sense a selected one or more of seismic, pressure, temperature, water cut, flow rate, radioactivity and phase parameters.

86. The method according to claim 83, wherein in the monitoring step there are multiple ones of the sensor distributed along the first fiber optic line.

87. The method according to claim 83, wherein the monitoring step further comprises monitoring well temperature distributed along the first fiber optic line.

88. The method according to claim 83, wherein the monitoring step further comprises identifying a location of influx of water from the formation into the well.